QUARTERLY REPORT

(for July - September 1996)

Contract No. NAS596060

Enhanced Land cover and land Cover Change products from MODIS Algorithm Development and Post Launch Studies

by

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1. At-launch Land Cover Product.

a. Task Objectives:

i) The principal objective of this task is to supply a validated at-launch land cover product based on the AVHRR at a resolution of 1 km.

ii) A subsidiary objective is to gain agreement on the classes to be used in the product.

b. Task Progress:

i) As stated in the proposal the expected product for this purpose will be the IGBP-based product based on the global 1 km AVHRR data set being generated at the EROS data Center. We stated that if needed we would be willing to supply a 1km data set based on our own analysis of this data set using training data used for our currently funded 8 km land cover classification project. We believe it is important to supply some sort of 1 km reference data plane as soon as possible, but the EDC/IGBP product will not be available until June of 1997. We therefore accelerated the generation of global monthly composites from the 1 km AVHRR data set as a preliminary to production of a prototype classification which can be provided to the MODIS project.

Discussions were held with a representative of the Boston University land cover team and the lead person of the Pathfinder Global Land Cover Test site initiative on the specification and assembly of a integrated set of land cover test sites.

ii) Copies of the legends of the two likely to be available products were circulated to all members of the MODIS team. Several responses were received with indications of changes that would be required. It was agreed to defer any decision about this issue until the MODIS land cover meeting scheduled to be held at Boston University (4th-6th. November). The reality is that currently there are few if any additional resources available to generate a new 1 km product with different classes.

c. Anticipated Activities During the Next Quarter:

i) Delivery of a place-holder 1 km product to the project.

ii) Definition of the classes to be included in the at-launch product as agreed by MODLAND.

2. Land cover change indicator product.

a) Task objectives

i) Generation of test data sets

ii) Production and testing of the at-launch change detection algorithm.

iii) Production and testing of post-launch change detection algorithm

b) Task progress

i) The code for the production of MODIS data from TM data was obtained from GSFC and was applied to a pair of Thematic Mapper scenes of southern Bolivia where intense changes in land cover are occurring.

ii) Because of concerns about the accuracy of multi-temporal registration of the 250m bands an alternative approach to that originally proposed was developed relying on changes in the spatial properties within a window 2kms in size. This reduces the impact of misregistration yet still considers changes at the 250m pixel size.. A trial of the method for the Bolivian scene was quite encouraging in its ability to detect changes in land cover compared with the result obtained from a perfectly registered simulation.

iii) No work was carried out on this sub-task

c) Anticipated Activities during the Next Quarter

i) Up to ten test data sets will be generated of TM pairs for a more comprehensive set of data for testing algorithms.

ii) We intend to implement and test several different algorithms for change detection and to make preliminary evaluations of the method to be selected.

iii) No work is anticipated on this sub-task.

3. Continuous fields of land cover properties.

a) Task objectives

Generation of continuous fields of land cover attributes

b) Task progress

High resolution data were analysed to provide a data set to calibrate and validate the continuous fields

c) Anticipated Activities during the Next Quarter

A prototype product created through our NASA grant on Global Land Cover Mapping will be evaluated using our set of land cover test sites

OTHER DEVELOPMENTS

This is the first reporting period of this contract. As such a considerable amount of time was spent in detailed negotiation of the contract, the hiring of personnel and the ordering of equipment. By the end of the reporting period all of these tasks were nearing completion and in fact shortly after the end of the reporting period were fully staffed and the main computing equipment had been delivered.